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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,481	09/04/2003	Yosuke Fujii	TOW-041RCE	8703
959 7590 12/05/2007 LAHIVE & COCKFIELD, LLP ONE POST OFFICE SQUARE BOSTON, MA 02109-2127			EXAMINER HODGE, ROBERT W	
			ART UNIT	PAPER NUMBER
			1795	
			MAIL DATE	DELIVERY MODE
			12/05/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/656,481

Applicant(s)

FUJII ET AL.

Examiner

Robert Hodge

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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**DETAILED ACTION*****Response to Arguments***

Applicant's arguments filed 10/25/07 have been fully considered but they are not persuasive. Applicants state that Steck does not teach a seal member having an outer peripheral portion wholly interposed between and contacting said first metal separator and said electrolyte as currently recited in amended claims 1 and 6. This is not found persuasive for at least the reason that applicants have added new matter to the claims which will be addressed below. Furthermore in Steck there is a portion of the seal 12 in figure 4, which starts at 18b and extends in an outward direction (i.e. an outer peripheral portion (emphasis added)) away from the active area of the fuel cell to at least 16b that is wholly interposed between the metal separator 22 and the electrolyte 16. Applicants are using open claim language and therefore more can be present in the prior art than what is recited in the claims and still read on the claims. As clarified above the Examiner interprets the area of the seal 12 of Steck between 18b and 16b to be "an outer peripheral portion" of the seal (emphasis added). Therefore the rejections will be maintained.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-4 and 6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1 and 6 both recite "a seal member having an outer peripheral portion wholly interposed between and contacting the first metal separator and the electrolyte". The limitation of "wholly" is new matter. As can be seen in figure 3 of the instant application the outer peripheral portion of seal 60 is present in areas that are not "wholly" interposed between the metal separator and the electrolyte, such as around the peripheries of manifold openings 30a and 30b. If the electrolyte were situated such that the seal 60 is "wholly" sandwiched between the electrolyte and the metal separator around the manifold openings then the electrolyte would be blocking the flow of gases to and from the fuel cells. Therefore as clarified above the seal cannot be "wholly" interposed between the electrolyte and metal separator because there will in fact be portions of the seal at an outer periphery (such as around the manifold openings) that will not be in contact with the electrolyte at all.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,464,700 hereinafter Steck.

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As seen in figure 6, Steck teaches a fuel cell comprising an electrolyte electrode assembly (EEA) 40 including a pair of electrodes 18 and 20 with an electrolyte 16 interposed between said electrodes, said electrodes include gas diffusion layers (i.e. carbon fiber electrodes) with respective electrode catalyst layers facing said electrolyte (i.e. electrochemically active portion), wherein a surface area of the electrode (i.e. gas diffusion layer (GDL)) 20 is larger than the surface area of the electrode (i.e. GDL) 18 and electrode (i.e. GDL) 20 includes an outer marginal region extending outwardly beyond an outer region of electrode (i.e. GDL) 18, two electrically conductive separators 22 and 24 sandwich the EEA with respective reactant gas flow fields, a seal member 12 having an outer portion (around 18b) interposed between and contacting the separator 22 and the electrolyte 16 and an inner portion 12c interposed between and contacting the separator 22 and the electrode (i.e. GDL) 18, wherein the inside portion of the inner portion 12c of the seal member acts as a flow field wall, and the flow field wall, said outer region (around 18b) and said separator 22 define an outermost one of said reactant gas flow fields. Steck also teaches that the separator 22 includes a surface in contact with the electrode 18 and a flat surface spaced from said electrode, said seal member includes a main seal interposed between said electrolyte and said flat surface and said flow field wall is interposed between said outer region of said the GDL and said flat surface. See also column 1, lines 15-38, column 2, line 63 – column 3, line 26 and column 4, line 56 – column 6, line 11. As clarified above and reiterated herein: Steck teaches a portion of the seal 12 in figure 4, which starts at 18b and extends in an outward direction (i.e. an outer peripheral portion (emphasis added)) away from the

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active area of the fuel cell to at least 16b that is wholly interposed between the metal separator 22 and the electrolyte 16. Applicants are using open claim language and therefore more can be present in the prior art than what is recited in the claims and still read on the claims. As clarified above the Examiner interprets the area of the seal 12 of Steck between 18b and 16b to be "an outer peripheral portion" of the seal (emphasis added).

Steck does not teach that the separator plates are metal.

At the time of the invention it would have been obvious to one having ordinary skill in the art to use metal for the electrically conductive separator plates of Steck in order to provide a separator plate that is electrically conductive and resilient that will resist the compression of the fuel cell stack without breaking.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steck in view of U.S. Pre-Grant Publication No. 2002/0119358 hereinafter Rock.

Steck as discussed above is incorporated herein.

Steck does not teach that the shape of the flow fields are serpentine or a partition seal.

Rock teaches a bipolar plate assembly with reactant gas flow fields for fuel cells wherein a seal member includes a flow field wall between the outer region of a gas diffusion layer and a separator flat surface, said reactant gas flow field is a serpentine flow passage having at least one turn region and a partition seal is in contact with the electrolyte membrane and the reactant gas flow fields (abstract, paragraphs [0006]-[0011], [0027]-[0032], [0036], [0038]-[0040] and [0044]).

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At the time of the invention it would have been obvious to a person having ordinary skill in the art to provide serpentine flow fields and a partition seal in Steck as taught by Rock in order to provide a more compact fuel cell stack that has superior sealing characteristics and utilizes fewer parts for the purpose of assembly.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Hodge whose telephone number is (571) 272-2097. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RWH

  
JONATHAN CREPEAU  
PRIMARY EXAMINER